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Magnetic Nanostructures

February 13-18, 2000
Holiday Inn, Ventura, CA

Chair: **Albert Fert**
Vice-chair: **Robert J. Celotta**

Please visit the [Conference Home Page](#) for more information.

SCOPE OF CONFERENCE:

This conference follows the very successful first and second Gordon Research Conferences on Magnetic Nanostructures that were held in Irsee, Germany, September 1995 and in Ventura, California, USA, January 1998. The purpose of this program is to bring participants up to date on the latest developments since that time, to analyse their significance, and consider profitable methods of approach for making progress. In general, the conference will concentrate on discussions of the fundamental mechanisms underlying the unusual properties of these structures. A review of known information is not the primary goal.

The conference will be held at the Ventura Holiday Inn and will have the traditional Gordon Conference format : 1 hour talks, 3 morning talks, 2 evening talks, with afternoons free for discussion and activities. The conference begins with an evening session on Sunday, 13th and ends on Friday morning (last session on Thursday evening).

This Gordon conference will focus on the following experimental and theoretical topics :

- nanoscale magnetism, magnetic switching in small elements and heterostructures, molecular magnets, quantum tunneling of magnetization
- multilayered structures, exchange bias, current driven switching
- magnetic semiconductors, spin transport in semiconductors and heterostructures, spintronics
- ferromagnetic material/superconductor heterostructures
- spin dependent tunneling : magnetic tunnel junctions, spin polarized STM, single electron effects
- new materials for magnetic nanostructures and spin dependent transport : oxides, half-metals etc..
- new methods using synchrotron radiation, neutrons etc..
- applications : sensor, memory (MRAM), quantum computing

These topics will appear in the October 8, 1999 issue of Science, along with the formal announcement of the Gordon Conferences.

Session 1: Sunday evening

Discussion Leader: **Hideo Ohno** (Tohoku University, Sendai)

- **David D. Awschalom** (UC, Santa Barbara): "Injection, transport, and storage of spin coherence in semiconductors"
- **Georg Schmidt** (University of Würzburg, Germany): "Demonstration of efficient spin-injection into a semiconductor using a semimagnetic spin-filter"
- **Anthony Bland** (University of Cambridge, UK): "Spin polarized electron transport in ferromagnet semiconductor hybrid structures induced by photon excitation"
- **Junsaku Nitta** (NTT, Kanagawa, Japan): "Spin injection experiment with NiFe/2DEG-InAs heterostructures"
- **Michael L. Roukes** (CalTech, USA): "Electrical spin injection in ballistic two-dimensional electron gas"

Session 2: Monday morning

Discussion Leader: **Jagadeesh Moodera** (MIT, Boston)

- **Jose M. De Teresa** (CNRS/Thomson-CSF, Orsay): "Experiments on magnetic tunnel junctions"
- **Peter M. Levy** (NYU, New York): "Magnetic tunnel junctions : status of the theory"
- **Y. Nakamura** (NEC, Tsukuba): "Coherent quantum states and quantum computing"

Session 3: Monday evening

Discussion Leader: **Bernard Barbara** (CNRS, Grenoble)

- **Hari Manoharan** (IBM, Almaden): "Quantum mirages and phantom magnetism"
- **Juergen Kirschner** (MPI, Halle): "Spin-polarized scanning tunneling microscopy on ferromagnets"
- **Andrew Kent** (NYU, New York): "New results and perspectives on quantum tunneling of the magnetization in molecular magnets: Mn_{12} and Fe_8 "

Session 4: Tuesday morning

Discussion Leader: **Jeff Byers** (Naval Research Laboratory)

- **Jack Bass** (MSU, East Lansing): "Current perpendicular giant magnetoresistance (CPP-MR): scientific advances and technological potential"
- **John Slonczewski** (IBM, Yorktown): "Domain reversal and spin-wave excitation by means of spin-polarized current"
- **Robert A. Buhrman** (Cornell University, Ithaca): "Ferromagnet-superconductor interfacial transport: Andreev reflection and spin injection"

Session 5: Tuesday evening

Discussion Leader: **Chia-Ling Chien** (Johns Hopkins University)

- **Mark D. Stiles** (NIST, Gaithersburg): "Modeling exchange-biased multilayers"

- **Gernot Güntherodt** (RWTH, Aachen): "Microscopic origin of exchange bias at ferro/antiferromagnetic interfaces (experimental)"

Session 6: Wednesday morning

Discussion Leader: **Juergen Kirschner** (MPI, Halle)

- **Joachim Stohr** (IBM, Almaden): "X-ray spectro-microscopy of ferromagnetic and antiferromagnetic thin films"
- **Alain Fontaine** (CNRS and ESRF, Grenoble): "Local structure, local magnetism and element-selective dynamics of magnetic nanosystems with nanosecond-resolved XMCD"
- **D. Weller** (IBM, Almaden): "Thermal stability limits in magnetic recording media"
- **Ursula Ebels** (IPCMS-CNRS): "Domain wall magnetoresistance in magnetic wires"

Session 7: Wednesday evening

Discussion Leader: **David Awschalom** (University of California)

- **Gustaaf Borghs** (IMEC, Leuven): "Ferromagnetic III-V semiconductors"
- **Zachary Fisk** (Florida State University): "Low carrier density ferromagnetism"

Session 8: Thursday morning

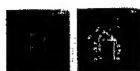
Discussion Leader: **Stuart Parkin** (IBM, Almaden)

- **Paolo P. Freitas** (INESC, Lisbon): "Applications of GMR and TMR to MRAM and read heads"
- **J. Miltat** (Université Paris-Sud, Orsay): "Fast switching vs damping in sub-micron size elements or stacks from a theoretical and numerical perspective"
- **Roger H. Koch** (IBM, Yortown): "Thermally-assisted magnetization reversal in sub-micron permalloy films : measurement, simulation and analysis"

Session 9: Thursday evening

Discussion Leader: **Ingrid Mertig** (TU-Dresden)

- **Daniel Ralph** (Cornell University): "Electron tunneling via single energy levels in cobalt nanoparticles"
- **Sadamichi Maekawa** (Tohoku University, Sendai): "Spin dependent tunneling with Coulomb blockade in granular systems"
- **Patrick Bruno** (MPI, Halle): "Summary of the conference"



MAGNETIC NANOSTRUCTURES

Holiday Inn, Ventura, CA
(13-Feb-00) - (18-Feb-00)

NOTE: Receipt of Application does not guarantee acceptance to a Conference. Applications are reviewed by the Conference Chair. If the Chair approves your application, you become **Accepted**, and a registration packet will be mailed immediately. Please allow 3-5 days for your registration to reach you by mail once your name appears. When your registration packet has been received back in our office, you become **Registered**.

Only those who have been **Accepted** or **Registered** will have their names listed below. Names of people who have only applied and have yet to be accepted will NOT appear.

Name	Organization	Participation	Status
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<u>ABDELMADJID ANANE</u>	MARTECH-FLORIDA STATE UNIVERSITY	Poster Presenter	Registered
<u>SIMONE ANDERS</u>	LAWRENCE BERKELEY NATIONAL LABORATORY	Poster Presenter	Registered
<u>MISCHA ANDRIESSE</u>	DIMES/DELFT UNIVERSITY OF TECHNOLOGY	Poster Presenter	Registered
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<u>WILLIAM E BAILEY</u>	NIST	Poster Presenter	Registered
<u>IMRE BAKO</u>	HUNGARIAN ACADEMY OF SCIENCES	Poster Presenter	Registered
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<u>JOHN UNGURIS</u>	NIST	Attendee	Registered
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<u>PHILIP E WIGEN</u>	OHIO STATE UNIVERSITY	Attendee	Registered
<u>STEFFEN WIRTH</u>	MARTECH	Poster Presenter	Registered
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